

## NEW EXOTIC CRANE-FLIES (TIPULIDAE: DIPTERA) PART XXII<sup>1</sup>

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The preceding part under this general title was published in Entomological News, vol. 82: 113-120. Additional to the new species here described I am providing figures of the wing venation for fifteen species of Indian species of the genus *Hexatoma* that had been described in earlier parts of this series of papers. None of these has been figured before and all are based on type specimens. The new species are preserved in the Alexander Collection.

### *Limonia* (*Goniodineura*) *kraussiana*, NEW SPECIES

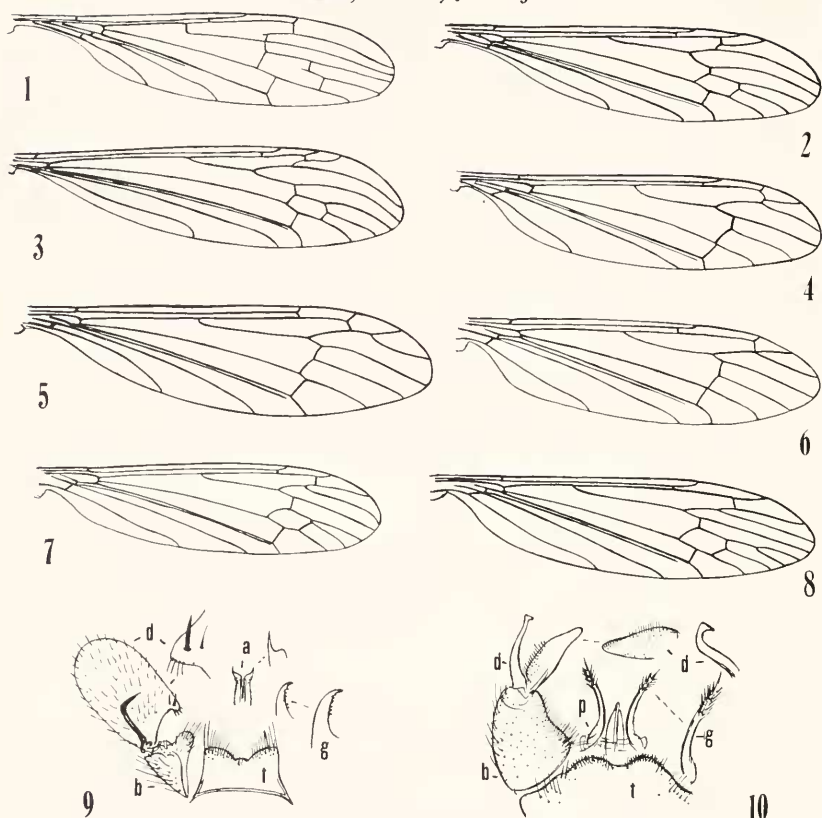
Size large (wing of male 9 mm); general coloration of thorax yellow, praescutum with center of disk polished black, scutal lobes and mediotergite blackened; legs yellowish brown, femoral tips narrowly black; wings with proximal two-thirds white, conspicuously patterned with light and darker brown, apex broadly light brown; both veins *Rs* and *R*<sub>2+3</sub> rectangular at origin, cell *1st M*<sub>2</sub> large, vein *m* angulated and spurred; abdominal tergites black, restrictedly patterned with yellow, sternites yellowed.

MALE.—Length about 8.5 mm; wing 9 mm; antenna about 1.5 mm.

Rostrum black, relatively long, about one-fourth the remainder of head, palpi black. Antennae with scape and pedicel black, flagellum light brown, bases of segments tinged with green; dorsal flagellar verticils very long, to about one-half longer than the segment. Head with anterior vertex dull brown, posterior vertex

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FIGURES 1-10.—Fig. 1, *Limonia* (*Goniodineura*) *kraussiana*, new species, venation. Fig. 2, *Eupilaria leucopeza*, new species; venation. Fig. 3, *Eupilaria melanoptera*, new species; venation. Fig. 4, *Hexatoma* (*Hexatoma*) *khasiensis* Alexander; venation. FIG. 5, *Hexatoma* (*Hexatoma*) *kinnara* Alexander; venation. FIG. 6, *Hexatoma* (*Hexatoma*) *madrasensis* Alexander; venation. FIG. 7, *Hexatoma* (*Eriocera*) *artifex* Alexander; venation. FIG. 8, *Hexatoma* (*Eriocera*) *citrina* Alexander; venation. FIG. 9, *Limonia* (*Goniodineura*) *kraussiana*, new species; male hypopygium. FIG. 10, *Eupilaria melanoptera*, new species; male hypopygium. (Symbols: a, aedeagus; b, basistyle; d, dististyle; g, gonapophysis; p, phallosome; t, 9th tergite.)

and occiput polished black; anterior vertex relatively narrow, about one-half the diameter of the scape.

Cervical region and pronotum black, sides abruptly yellow. Mesonotal praescutum with center of disk polished black, widened behind, sides broadly light yellow; scutal lobes polished black, median area, including also the adjoining extreme posterior border of praescutum, together with the scutellum light yellow; mediotergite black, the sides posteriorly and the pleurotergite light yellow. Pleura

uniformly clear light yellow. Halteres with stem yellow, knob conspicuously black. Legs with coxae and trochanters light yellow; femora yellowish brown, tips narrowly black; tibiae light brown, apices very narrowly black; tarsi brown, outer segments darker. Wings (Fig. 1) with disk of the proximal two-thirds white, prearcular field slightly more yellowed; wing tip broadly light brown, including also a spot at end of cell *1st A* adjoining the vein; beyond the cord the whitened ground includes bases of outer radial cells, virtually all of cell *1st M*<sub>2</sub>, and restrictedly in bases of cells *2nd M*<sub>2</sub> and *M*<sub>4</sub>; large darker brown areas at arculus, origin of *Rs* and the cord, all parallel-sided, with narrower similar darkenings at outer end of cell *1st M*<sub>2</sub> and as a seam along vein *Cu* chiefly in cell *M*<sub>3</sub>; stigma oval, still darker brown; veins black, more yellowed in prearcular field. Venation: *Sc* long, ending about opposite four-fifths *Rs*, *Sc*<sub>2</sub> long removed; both *Rs* and *R*<sub>2+3</sub> perpendicular at origin, the latter with a short spur at the angulation; *Rs* in direct longitudinal alignment with *R*<sub>4+5</sub>, *R*<sub>2+3</sub> at the fork; cell *1st M*<sub>2</sub> large, *m* angulated, with a strong spur jutting into cell *1st M*<sub>2</sub> at the angle; *M*<sub>3+4</sub> nearly twice *M*<sub>1</sub>, *m-cu* about its length beyond fork of *M*; Anal veins gently divergent.

Abdominal tergites black, base of second segment with a broad light yellow ring, sternites and eighth and ninth segments chiefly yellowed, remainder of hypopygium brown. Male hypopygium (Fig. 9) as in the subgenus. Ninth tergite, *t*, transversely rectangular, posterior angles produced laterad and slightly cephalad into points; lobes obtuse, median elevation small, setae of lobes abundant, long, a few stouter. Basistyle, *b*, with about one-third the area of the ventral dististyle, ventromesal lobe oval, with long setae. Dorsal dististyle, *d*, a strongly curved sickle, the apex a long spine; ventral style with setae relatively small and sparse; rostral prolongation short and stout, the major outer spine at center of disk, the greatly reduced second spine setiform, more basal. Gonapophysis, *g*, with mesal-apical lobe slender, inner margin before apex with a few microscopic points. Aedeagus, *a*, with each outer lobe extended into a needlelike point.

HABITAT.—Fiji. Holotype: ♂, Lami, Viti Levu, 100-300 meters, March 1, 1971 (Noel L. H. Krauss).

This conspicuous crane fly is named for the collector, Noel Krauss, to whom I am indebted for many crane flies that he had collected in virtually all biotic regions, including Madagascar. The closest relative is the subgenotype, *Limonia* (*Goniodineura*) *nigriceps* (van der Wulp), wide-spread in the Oriental and Australasian regions, which similarly has the veins *Rs* and *R*<sub>2+3</sub> rectangularly bent and which suggested the subgeneric name. The two species differ conspicuously in the venational details and in coloration. Virtually all of the other species of *Goniodineura* have the venation without this angulation of the veins, being more like the other species in the genus *Limonia*.

### ***Eupilaria leucopeza*, NEW SPECIES**

General coloration of mesonotal praescutum brownish yellow, with

four pale brown stripes, pleura obscure yellow with two conspicuous brownish black longitudinal stripes; legs brown, extreme tip of basitarsus and remainder of tarsi white; wings very strongly infuscated, stigma dark brown, preceded and followed by conspicuous yellowed areas; abdomen dark brown, posterior borders of segments gray.

FEMALE.—Length about 9 mm; wing 7.5 mm; antenna about 1.3 mm.

Rostrum obscure yellow, mouthparts and palpi black. Antennae with proximal four segments yellow, the outer ones black; segments with very long verticils, the first five on dorsal face only. Head light gray.

Pronotum brown, sides yellowed. Mesonotal praescutum brownish yellow with four pale brown stripes; scutum testaceous, lobes weakly darkened; scutellum and postnotum light brown, cephalic parts darker. Pleura obscure yellow, with two conspicuous brownish black longitudinal stripes that are slightly narrower than the intervening ground line, dorsopleural membrane yellow. Halteres blackened, base of stem narrowly yellow. Legs with coxae yellow, bases of fore pair narrowly blackened; trochanters yellow; femora obscure yellow, tips broadly dark brown; tibiae light brown, extreme tips darker; basitarsi brown, apex and remaining tarsal segments white. Wings (Fig. 2) very strongly infuscated, prearcular and costal fields slightly more yellowed; stigma dark brown, preceded and followed by conspicuous yellowed areas; veins brown, only slightly paler in the brightened areas. Venation:  $Sc_1$  ending just beyond fork of  $R_s$ ; veins  $R_4$  and  $R_5$  parallel to one another; cell  $1st\ M_2$  subequal in length to vein  $M_4$ ;  $m-cu$  at mid-length of  $M_{3+4}$ .

Abdomen dark brown, posterior borders of both tergites and sternites rather broadly gray.

HABITAT.—Thailand. Holotype: ♀, Doi Sutep, February 7, 1953 (Deed C. Thurman).

*Eupilaria leucopeza* is readily told from other regional species of the genus by the white tarsi. *E. leucopoda* (Alexander), from the Philippines (Mindanao) similarly has whitened tarsi but with the wing pattern quite different.

### ***Eupilaria melanoptera*, NEW SPECIES**

Size very large (wing of male over 11 mm); thoracic dorsum orange, virtually unpatterned, pleura more yellowed; antennae black; wings almost uniformly dark brown,  $R_{2+3+4}$  long, only slightly less than the basal section of  $R_5$ ; male hypopygium with apices of the gonapophyses bearing numerous long spines.

MALE.—Length about 9-9.5 mm; wing 11.5-12 mm; antenna about 1.7-1.8 mm.

Rostrum obscure yellow, apically tufted with black setae, palpi black. Antennae black throughout; outer flagellar segments elongate, verticils of intermediate segments very long. Head plumbeous gray; anterior vertex with a small median tubercle, broad, about four times the diameter of the scape.

Prothorax and mesothorax almost uniformly orange, praescutal interspaces deeper orange; pseudosutural foveae large, pale. Pleura and pleurotergite uniformly yellow. Halteres blackened. Legs with all coxae and trochanters yellow; femora dark brown, gradually passing into black outwardly, bases restrictedly obscure yellow; tibiae and tarsi black; claws small. Wings (Fig. 3) almost uniformly dark brown, stigma slightly darker; a continuous longitudinal white streak from near base of cell *R* adjoining vein *M*, crossing cell *1st M*<sub>2</sub> into cell *M*<sub>3</sub>; a comparable whitened line in basal half of cell *1st A* adjoining the vein; veins brown. Longitudinal veins beyond the general level of cord with long trichia, lacking on *Sc*, *Rs* and all veins before cord. Venation: *Sc*<sub>1</sub> ending about opposite four-fifths *R*<sub>2+3+4</sub>, the latter long, only a little less than the basal section of *R*<sub>5</sub>; *m-cu* at near one-third to two-fifths *M*<sub>3+4</sub>.

Abdominal tergites dark brown, basal five sternites in cases more yellowed, outer segments, including hypopygium, black. Male hypopygium (Fig. 10) with posterior border of tergite, *t*, produced into two low darkened lobes that are densely covered by short black setae. Basistyle, *b*, stout, mesal face with dense delicate setae, more conspicuous on the produced basal part. Dististyles, *d*, relatively small, outer style slender, gently sinuous, the small head slightly produced; inner style stout, darkened, outer margin with abundant erect setae. Phallosome, *p*, distinctive, especially the elongate gonapophyses, *g*, which narrow outwardly into a terminal spine, on outer third before apex with about 15 long spines, the more basal ones smaller.

HABITAT.—India. Holotype: ♂, Sirhoi Kashong, Manipur, Assam, 7,500 feet, June 10, 1960 (Fernand Schmid). Paratype, ♂, Chingsao, Manipur, 5,400 feet, June 14, 1960 (Schmid).

*Eupilaria melanoptera* is readily told from other species by the large size and the spinose gonapophyses of the male hypopygium. The most similar species is *E. uma* Alexander of Sikkim, which is readily told by the venation, as the very short vein *R*<sub>2+3+4</sub> which is subequal to vein *R*<sub>2+3</sub>.

### *Limnophila* (*Dicranophragma*) *kamengensis*, NEW SPECIES

General coloration of mesonotal praescutum light brown, the disk with three obscure yellow stripes, the central one broad, pleura chiefly brownish black; legs light brown, tips of femora narrowly whitened;

wings yellowed, with a solidly darkened brown pattern that includes seven darker brown costal areas, the remaining cells more uniformly darkened, including all of 2nd A; supernumerary crossvein in cell  $R_3$  far distad.

MALE.—Length about 5.5 mm; wing 6 mm.

Rostrum and palpi black. Antennae with scape and pedicel light yellow; flagellum broken. Head with the broad anterior vertex light silvery gray, posterior vertex darker gray.

Pronotal scutum buffy yellow, scutellum light yellow. Mesonotal praescutum with the ground light brown, disk with three obscure yellow stripes, the median one broad; scutum and scutellum fulvous yellow, scutal lobes slightly darker; mediotergite grayish yellow, pleurotergite brownish black. Pleura chiefly dark brown to brownish black, ventral sclerites vaguely more brightened, dorsopleural region obscure yellow. Halteres with stem yellow, knob weakly darkened. Legs with coxae and trochanters yellow, fore coxae slightly darker; femora light brown, near outer end more darkened, tip narrowly and abruptly white; tibiae brown, the extreme apex and the tarsi yellowish brown. Wings with the ground yellowed, with a solidly darkened brown pattern that is about equal in extent, including about seven larger and slightly darker costal areas, the third at origin of  $R_s$ , fifth at stigma, all such areas distad of the small mark at  $h$  reaching the medial field behind; ground areas of anterior third of wing nearly twice as extensive as the darkenings; cells of posterior half extensively clouded with paler brown, including all of cell 2nd A and most of cells  $M$  and  $Cu$ ; extensive similar clouds over cord, outer end of cell 1st  $M_2$  and over the veins beyond cord, on the posterior half of wing the darkened portions much more extensive than the yellow ground; wing with no interpolated dots or spots in the cells; veins brown. Venation: Supernumerary crossvein in cell  $R_3$  far distad, subequal in length to distal section of vein  $R_3$ ; cell  $M_1$  subequal to its petiole; cell 2nd A narrow.

Abdomen dark brown; hypopygium with proximal two-thirds of basistyle yellowed. Male hypopygium with the inner dististyle narrowed apically.

HABITAT.—India. Holotype: ♂, Bomdi La, Kameng, North East Frontier Agency, Assam, 8,800 feet, July 15, 1961 (Fernand Schmid).

The most similar regional species is *Limnophila* (*Dicranophragma*) *kashongensis* Alexander, from Manipur, Assam, which has the wing pattern generally similar but differing in the details, differing further in the narrow wings and in the uniformly darkened legs.

*Hexatoma* (*Hexatoma*) *khasiensis* Alexander

*Hexatoma* (*Hexatoma*) *khasiensis* Alexander; Ent. News, 73: 209; 1962.

Type from Kalanga, Mikir Hills, Assam, India. Fig. 4 (venation).

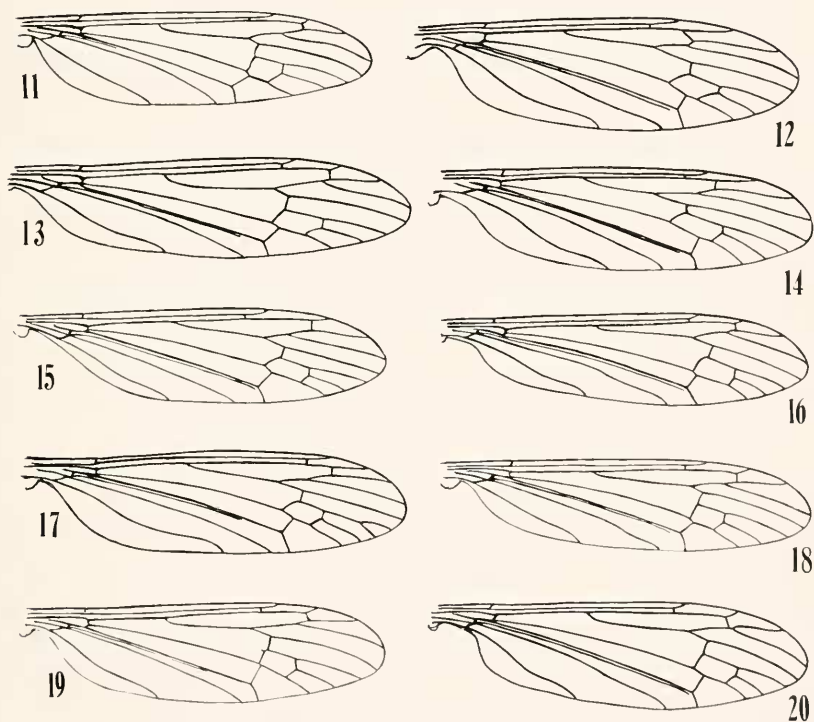


*Hexatoma (Hexatoma) kinnara* Alexander*Hexatoma (Hexatoma) kinnara* Alexander; Ent. News, 74: 99; 1963.

Type from Bongba Khunov, Manipur, Assam, India. Fig. 5 (venation).

*Hexatoma (Hexatoma) madrasensis* Alexander*Hexatoma (Hexatoma) madrasensis* Alexander; Ent. News, 72: 113; 1961.

Type from Veraiyattu Tittu, Madras, India. Fig. 6 (venation).



FIGURES 11-20.—FIG. 11, *Hexatoma (Eriocera) gnava* Alexander; venation. FIG. 12, *Hexatoma (Eriocera) homochroa* Alexander; venation. FIG. 13, *Hexatoma (Eriocera) mikirensis* Alexander; venation. FIG. 14, *Hexatoma (Eriocera) mitra* Alexander; venation. FIG. 15, *Hexatoma (Eriocera) phacton* Alexander; venation. FIG. 16, *Hexatoma (Eriocera) proluxa* Alexander; venation. FIG. 17, *Hexatoma (Eriocera) rudra* Alexander; venation. FIG. 18, *Hexatoma (Eriocera) terebrella* Alexander; venation. FIG. 19, *Hexatoma (Eriocera) terebrina* Alexander; venation. FIG. 20, *Hexatoma (Eriocera) setigera* Alexander; venation.

*Hexatoma (Eriocera) artifex* Alexander*Hexatoma (Eriocera) artifex* Alexander; Ent. News, 72: 118; 1961.

Type from Swamp Hill, Madras, India. Fig. 7 (venation).

*Hexatoma (Eriocera) citrina* Alexander*Hexatoma (Eriocera) citrina* Alexander; Ent. News, 76: 219; 1965.

Type from Nongrim, Khasi-Jaintia, Assam, India. Fig. 8 (venation).

*Hexatoma (Eriocera) gnava* Alexander*Hexatoma (Eriocera) gnava* Alexander; Ent. News, 72: 117; 1961.

Type from Sykes, Bombay, India. Fig. 11 (venation).

*Hexatoma (Eriocera) homochroa* Alexander*Hexatoma (Eriocera) homochroa* Alexander; Ent. News, 74: 101; 1963.

Type from Tairenpokpi, Manipur, Assam, India. Fig. 12 (venation).

*Hexatoma (Eriocera) mikirensis* Alexander*Hexatoma (Eriocera) mikirensis* Alexander; Ent. News, 74: 103; 1963.

Type from Bangku, Mikir Hills, Assam, India. Fig. 13 (venation).

*Hexatoma (Eriocera) mitra* Alexander*Hexatoma (Eriocera) mitra* Alexander; Ent. News, 73: 213; 1962.

Type from Sirhoi Kashong, Manipur, Assam, India. Fig. 14 (venation).

*Hexatoma (Eriocera) phaeton* Alexander*Hexatoma (Eriocera) phaeton* Alexander; Ent. News, 72: 238; 1961.

Type from Kumuli, Madras, India. Fig. 15 (venation).

*Hexatoma (Eriocera) proluxa* Alexander*Hexatoma (Eriocera) proluxa* Alexander; Ent. News, 72: 235; 1961.

Type from Koti, Pauri Garhwal, Kumaon, India. Fig. 16 (venation).

*Hexatoma (Eriocera) rudra* Alexander*Hexatoma (Eriocera) rudra* Alexander; Ent. News, 74: 104; 1963.

Type from Huiahu, Manipur, Assam, India. Fig. 17 (venation).

*Hexatoma (Eriocera) terebrella* Alexander*Hexatoma (Eriocera) terebrella* Alexander; Ent. News, 71: 241; 1960.

Type from Jeypore (Jaipur), Orissa, India. Fig. 18 (venation).

*Hexatoma (Eriocera) terebrina* Alexander*Hexatoma (Eriocera) terebrina* Alexander; Ent. News, 71: 242; 1960.

Type from Jeypore (Jaipur), Orissa, India. Fig. 19 (venation).



*Hexatoma (Eriocera) setigera* Alexander

*Hexatoma (Eriocera) setigera* Alexander; Ent. News, 73: 215; 1962.

Type from Hkayam Boum, Manipur, Assam, India. Fig. 20 (venation).

2.0129 New exotic crane flies (Tipulidae: Diptera). Part XXII.

Abstract.—New species and figures of wing venation of 15 species of Indian crane flies of the genus *Hexatoma* are described.—Charles P. Alexander, *Department of Entomology, University of Massachusetts, Amherst, MA 01002*.

Descriptors: Diptera; Tipulidae; *Hexatoma* spp., India; India, Tipulidae.